

North Yorkshire Minerals and Waste Joint Plan Examination

Proposed Allocation at Whitewall Quarry Sustainability Statement

W Clifford Watts Ltd

14th March 2018

1. During the Hearings for Aggregates and Building Stone the authorities conceded that the site was significant locally, and although small in terms of the plan area's output of crushed rock, the quarry helped to sustain supply for part of the plan area. Given that a strategic justification for an allocation was considered justified, the Inspector asked each of the parties to provide a Sustainability Statement on the Proposed Allocation at Whitewall Quarry. This was to encompass the following
 - The Control of Amenity
 - The Control of Traffic
 - The Sustainability of Alternatives
 - The Suitability of the Site for the Supply of Building Stone

Control of Amenity

Noise

2. W Clifford Watts' case is that the quarry operates in accordance with modern conditions and has no unacceptable amenity effects. All complaints have been addressed expeditiously by the Council and the operator and none have been found to be justified with reference to the conditions. The proposed allocation can also be controlled adequately by condition.
3. The nearest property to the existing quarry is 187 Welham Road on Whitewall Corner which is 200 metres from the northern boundary of the quarry. However, it is 285 metres from the nearest operation at the quarry, which is the concrete plant.
4. The quarry operations benefit from substantial screening of the quarry floor being 30 m below surrounding ground levels, and 15 m below the northern rim of the quarry. The working face is approximately 750 m from the nearest property.
5. The nearest property to the proposed southern extension (including an extension of time on the existing permission) is Welham Wold Farm which is 290 metres from the proposed area of working. All other properties are more than 500 metres for the extraction area.
6. Noise – condition no. 14 of the principal planning permission requires operations not to exceed 10 dB(A) above background. This says, "*During the working hours specified in Condition Number 10 noise from operations on site including use of both fixed plant and mobile machinery shall not exceed the background noise level by more than 10 dB at any noise sensitive locations. Measurements shall be hourly LAeq measurements and shall be corrected for the effects of any extraneous noise. If at any time national standards indicate or require more stringent control of noise levels the criteria of the national standards shall apply.*"

7. Noise assessments including background levels were carried out in August 2014 by consultants on behalf of the operator and again in July 2016 by a consultant commissioned by the Council and measurements were taken at 187 Welham Road and adjacent to Whitewall Stables, and in the north east corner of the quarry. As a separate exercise the EHO at Ryedale District Council also carried out his own measurements.
8. The Council's consultants (**Appendix SS1**) assessed background levels of 37 dB(A) LA_{90} should be applied at Whitewall Stables and 38 dB(A) LA_{90} should be applied to 187 Welham Rd. This produced a limit for quarry noise of 47 dB(A) LA_{eq} and 48 dB(A) LA_{eq} respectively at the affected properties. Night time limits were assessed at 42 dB(A) LA_{eq} for both locations. The consultants categorised the nature of the background noise at these locations as follows, *"Road traffic noise affects the noise measurements recorded at the rear of Whitewall Stables and at 187 Welham Road. It is also the dominant background noise source affecting residences to the north of the quarry site. Welham Road itself is fairly busy and the dominant source of local road traffic. Distant road traffic is also audible at these locations."* (Section 7).
9. In terms of the noise from quarry operations the consultants said this, *"The impact of the screening/distance factors was noted during the manned surveys. At the position at the North-East corner of the Quarry the quarry operations are clearly audible and are generally the dominant source, with noted noise sources including mineral extraction operations, HGV movements, concrete panel operations (fork lift truck movements, lorry movements/loading, saw operations), concrete mixer movements. As you walk towards the residences to the north from this position the noise from the quarry quickly reduces due to the screening. Within 50-100m from the boundary the quarry is not clearly audible. By the time you reach the residences to the north road traffic is the dominant noise source, with the quarry only faintly audible on occasion."* (Section 7.1).
10. The consultants concluded that *"The measurements at the quarry position indicate a typical maximum contribution at the residences from Whitewall Quarry sources during the daytime in the range 34-42 dB(A) $LA_{eq,1h}$. Such levels are within the daytime noise limit of 47-48 dB(A) $LA_{eq,1h}$... The measurements at the quarry position also indicate a maximum contribution at the residences from Whitewall Quarry sources during the early morning period 06.30-07.00 in the range 31-36dB(A) $LA_{eq,30m}$. Such levels are within the night-time noise limit of 42 dB(A) $LA_{eq,1h}$."* (Section 8).
11. For the proposed extension, the extraction area is over 800 metres from the northern residences, and only affects one isolated farm property. Although still to be verified by detailed assessment, it is likely that the new quarrying activities will not affect the northern residences to any significant extent, whilst they will continue to be affected by the processing and added value activities on site. However, as shown these are well within the limits set by condition, subject to continued monitoring. It is also likely that Welham Wold Farm will not be adversely affected by extractive operations as these will take place largely below ground level, with effective attenuation by the screening effect of the quarry faces.
12. As such, the operator considers the current quarrying operation and the proposed extension to be sustainable for noise impacts.

Blasting

13. Blasting is carried out about once a month at the quarry, and each blast is monitored by the company at a location at 187 Welham Road, which is considered representative of the nearest residences. The face is currently about 750 metres south of this position.
14. Blasting is regulated by condition 17 of the principal planning permission, which says *"Blasting operations shall be designed and executed such that resultant ground vibration levels shall not exceed a peak particle velocity of 8mm/second at any inhabited building."* The most recent monitoring records (February 2018) show that the vibration levels have remained well within the permitted levels under this condition, with the highest measured at 0.5mm/second at the monitoring location. However, many blasts do not trigger the vibrograph at all.
15. For the proposed extension, it is also likely that a monitoring location would be established (if possible) at Welham Wold Farm as well. Given the way modern blasting is carried out (with reduced charge weights and delayed detonation) the operator is confident it can design blasts to maintain compliance with this condition.

Dust

16. Dust is controlled by condition 12 of the principal consent which says, *"Dust control measures shall be employed to minimise the emission of dust from the site. Such measures shall include the spraying of roadways, hard surfaces and stockpiles and discontinuance of soil movements during periods of high winds."* A road sweeper is operational three days a week, all year round (not weather dependant), and a water bowser is employed to assist in suppressing dust when necessary. These may also be used to control any mud on the highway.

Hours of Working

17. The principal permission allows working between 0630-1700 Monday to Friday and 0700-1300 Saturday. The panel plant permission allows working and movement of product between 0700-1900 Monday to Friday and 0700-1300 Saturday; the recycling operation allows working and movement of product between 0700-1700 Monday to Friday and 0700-1200 Saturday. Blasting is allowed between the hours of 0900-1600 Monday to Friday. The operator adheres to these times.

Other Amenity Matters

18. The site benefits from a wheelwash which is required only by the panel plant permission (condition no. 7) and in the following terms *"...precautions to be taken to prevent the deposit of mud, grit and dirt on public highways by vehicles travelling to and from the site have been submitted to and approved in writing by the County Planning Authority in consultation with the Highway Authority. These facilities shall include the provision of wheel washing facilities where considered necessary by the County Planning Authority in consultation with the Highway Authority."*
19. A wheelwash is installed in the site. However, the readymix plant and panel plant traffic use a hardstanding and separate access road and do not use this facility. The wheel wash is

intended for use by the quarry and recycling traffic which are not required by the planning permission to use it, but it is company policy that all vehicles leaving the weighbridge go through the wheelwash. However, as agreed with the planning authority vehicles do not use the wheelwash in dry conditions to prevent wet material sticking to the tyres and carrying it to the main road.

20. Condition no. 9 of the principal consent requires all vehicles carrying aggregates leaving the site to be sheeted. This is both a requirement of the principal planning permission and standard practice across the industry. All modern aggregate vehicles are fitted with easy sheet systems as standard, and it is company policy that all drivers use the system before departing the site. It is also advised as standard practice by the trade federation – the Mineral Products Association Drivers Handbook. However, it has been agreed with the Council that the movement of building stone and concrete products does not need to be sheeted as long as the loads are securely strapped down.

Other Environmental Matters

21. The company made a fairly detailed analysis of other environmental matters mentioned in the Council's Site Specific Sustainability Appraisal in its evidence to the inquiry which is contained in Table 1 in its Statement for Matter 1 – Minerals (Minerals Allocations in General). For ease of reference this is summarised below. To our knowledge the Council has not said that any of these matters would exclude the extension site from allocation, but would need to be examined at application stage. We concur with this conclusion.

Sustainability Matter	Concern	WCW Response
Biodiversity	Alleges 'concerns raised over pollution of groundwater' and impacts on SINC	Cannot find any reference to the alleged water pollution concerns at Whitewall. No evidence of existing quarry traffic impact on SINC.
Water quality	Minor risks to groundwater are mitigatable	Agreed
Reduce transport miles	Access to north would be through Norton.	Traffic assessment concludes all traffic from quarry would be imperceptible
Air quality	Located 2km from an AQMA. Nearest residence 230m from the site.	No evidence of air quality issues near site. Weight limit prevents quarry through traffic in AQMA.
Soils and land	Loss of 9ha of 'possible' BMV land. Could be cumulative impact of loss of land	Extension unlikely to have major effects
Reduce causes of climate change	A small amount of woodland would be lost to development.	Woodland would be preserved in development as a screen; new planting proposed for 3.8 ha
Respond to climate change	Significant water extraction unlikely. Loss of ag land will have a combined effect with other losses elsewhere.	Unlikely to have significant impacts
Minimise use of resources	Site will contribute to availability of 1st but may offset recycled	Further offsetting of recycled materials is unlikely.

	materials that could replace them.	
Minimise waste	Site would not deal with Waste. May have indirect impacts on the waste hierarchy by affecting recycling of Ist.	For recycling point, see above. The site utilises high levels of processing waste by producing ag lime from quarry dust.
Historic environment	Unlikely to have a major impact on HLC. High archaeological potential but capable of mitigation	Agreed
Landscape	The area is 'disturbed' but may affect the setting of Norton 1.3km away. May also breach Sutton Wold skyline.	Screened by landform, buildings and vegetation from Norton and will not affect its setting. Development would not breach the skyline
Economic growth	Ist would make a significant contribution to building sector & support jobs in extraction & freight. Increased or prolonged traffic & noise may have some adverse effect on horse training.	Economic importance of Ist extraction understated and contribution to construction sector and alleged impact on horse training overstated in light of letters of support for the quarry
Local communities	Future growth of 1500 houses in Malton/Norton. In area where development will be supported that is necessary for sustainable & healthy local economy. Job opportunities limited.	WCW has provided evidence of substantial economic benefit and contribution to local employment
Recreation, leisure	Site lies 150m NW of SUSTRANS route 166. Potential for increased traffic impacts and loss of amenity.	Since the proposal is an extension and the route recent, the impact of the quarry traffic on the route must have been considered acceptable when designated. Proposal involves no material increase in traffic; just for longer duration.
Wellbeing, health	One affected property 200m from site. Others within 700m. Potential for significant moderate impact on Norton and possibly Malton AQMA. Also, concerns on impacts on horses and jockeys due to increased traffic.	One affected property is 300m from proposed working. Potential for moderate negative impact on Norton and horse training has been exaggerated in light of letters of support from horse trainers
Flood risk	Site is in Flood Zone 1. No significant effects	Agreed
Changing population	No conflict with plan allocations. Site would make significant contribution to self-sufficiency of Ist supply.	Agreed
Cumulative impact	No conflicts identified with other active sites or allocations. Cumulative air quality effects 'observed'. 'Strain on the road network towards the A64 is a key consideration'.	Consider that air quality issues in relation to Whitewall are exaggerated whilst the traffic assessment shows no strain on the highway network.

22. All potential impacts listed above are capable of mitigation and control.

Control of Traffic

23. There is currently no planning restriction on the control of traffic numbers or routing associated with the quarry. Evidence given to the Examination by the operator shows that the maximum traffic levels associated with the future of the operation – climbing organically to 250,000 tpa would not give rise to any unacceptable traffic impacts on local roads. The Council's own traffic consultants said the effects of this level of traffic would be 'imperceptible'. The following analysis has been undertaken with information to hand; it does not represent a detailed TIA but one which is appropriate to a Local Plan sustainability analysis.

24. The traffic levels through Norton are shown in Campion Appendix E NAG Traffic Survey pages 91-92. This is a County Council 12 hour traffic survey on the B1248 Commercial St in Norton taken on 13th November 2014. These results show that the AADF count was 4,370, which is typical of this class of road. Of this flow 4.1% is HGV traffic (180/4370), which is low for this class of road. OGV2 traffic (the heaviest) as a percentage of all HGV traffic is 39% (71/180), which again is low for this type of road. If it is remembered that Whitewall quarry (as existing traffic) is included in these figures, then assuming a worst case scenario of all additional traffic travelling north the additional traffic arising from an organic growth of quarry output from 180,000 tpa to 250,000 tpa is 14 trips per day (36 trips/day to 50 trips/day) which would increase HGV traffic in Norton by 1.67%. In overall terms the contribution of this increase to all traffic would be 0.01%.

25. Furthermore, NYCC highways confirmed in October 2014 that the AADF figure for Welham Road is 3,300, which again would include the existing quarry traffic. This reflects the Council's noise consultant's comments in paragraph 8 above that Welham road is 'fairly busy' and road noise dominates at housing located on the road. As such, Welham Road is a major artery for access to the town even though it is classified as a C Class road.

26. The operator asserts that the data given above shows that the level of HGV traffic along Welham Road and Church St/Commercial St, of which the quarry traffic forms a part, is not excessive for this type of road and does not give rise to any unacceptable sustainability effects. To summarise the points made in evidence,

- The Jacobs Traffic Assessment undertaken for the Joint Local Plan for the site assumed a worst case scenario which concluded that the effect would be unlikely to be perceptible when considered as a standalone site and as the site is operational, trip generations from the site would be included when examining the effects of the future HGV restriction.
- The encouragement of the use of the B1248 through Norton as an alternative access to, and taking through traffic away from, the town centre via the improved A64 Brambling Fields junction is a matter of district and County Council policy.
- The Ryedale Core Strategy Traffic Assessment on which adopted policy was based would have included the existing quarry traffic in its baseline position in assessing the access policy.

- Malton/Norton is a typical North Yorkshire market town and Commercial Street in Norton (on the A1248) is described as a linear 'high street' as part of its designation as a local town centre.
- The extended length of built-up area of Norton referred to is the B1248 which is the secondary road network within the town and is expected by design to accommodate HGV traffic to access the town itself.
- Any aggregate delivered to the area for construction projects as part of the Ryedale Core Strategy, must also use this route.

27. Guidance for assessing the likely environmental impacts of traffic is contained in IEA guidance (**Appendix SS2**) (now IEMA) published in 1993¹. Detailed environmental assessment would only be triggered where road links experience a change in traffic of greater than 30% or 10% where the links contain sensitive interest, or where the increase in HGVs is significant. The IEA guidelines go on to state that any increases in traffic flows of less than 10% are generally accepted as having no discernible environmental impact as daily variance in traffic flows can be of equal magnitude. Given the evidence presented above on traffic, the changes proposed by an extension to the quarry would have no discernible environmental impact on users of the highways.

28. However, a number of other considerations need to be evaluated. These are amenity, severance, driver delay, pedestrian delay, intimidation, the Malton AQMA and cumulative impacts.

29. For amenity and pedestrian delay changes in the volume, composition or speed of traffic may affect the ability of people to cross roads leading to delays for pedestrians. The IEA guidance indicates that a two-way link flow of approximately 1,400 vehicles per hour broadly equates to a 10 second pedestrian delay in crossing a road. Below that level is seen as a negligible impact. The traffic flows given above are considerably below the indicative level for significance for amenity and pedestrian delay.

30. For driver delay there is currently queuing at the bottom of Welham Road at the level crossing and at the end of Church St due to changed traffic priorities. This is monitored as part of an ongoing exercise carried out by the highway authority and local authority. However, it has not been possible for the operator to carry out a quantitative assessment using standard software (e.g. PICADY) given the time in which to prepare a statement. However, it is unlikely that the increase in traffic associated with the development would increase driver delay significantly. In addition, no mention was made of this issue by the Council's consultants when evaluating sites for allocation so the operator has assumed that the issue is not likely to be significant.

31. For severance and intimidation, the scale of fear and intimidation experienced by receptors along access routes is subjective and influenced by the volume and the type of vehicle but also the level of protection available, such as having a property set back from the highway,

¹ Guidelines for the Environmental Assessment of Road Traffic, Institute of Environmental Assessment, 1993

wide footways and screening. The main part of the shopping area of Commercial St in Norton is between Wold St and Mill St. This area generally benefits from a 20 mph speed restriction, wide pavements/verges and on-street parking, all of which increase the separation between pedestrians and vehicles on the highway and reduce severance and intimidation. The carriageway is wide and suitable for the passage of large vehicles. As such, the operator does not believe there is a strong case to oppose the development on severance grounds.

32. The majority of the dwellings on Welham Road are also set back from the highway by front gardens or by grass verges. Pavement widths are standard.
33. The imposition of the weight restriction on County Bridge to stop HGVs from entering the Malton AQMA will mean that only quarry traffic needing access to the town centre to serve development will continue to go over the bridge into the AQMA. All other northbound traffic will use the B1248 through Norton, or go south down Welham Hill towards Stamford Bridge and the A166 to Driffield or York.
34. Finally, the Ryedale Core Strategy shows an allocation for mixed use development in Welham Road opposite Lidl supermarket which the operator understands to be a filling station, plus a large urban extension of 500 houses east of Beverley Road. These developments are not considered to add an unreasonable level of traffic to the local network and will not significantly affect the ability of quarry traffic to continue to use its current routes.

The Sustainability of Alternatives

35. Evidence was given of the ability of the alternative sites to make up for the shortfall of limestone production should Whitewall quarry close. Whitewall is the largest of the three operating sites (Settrington and Newbridge). The two remaining sites are located prominently in the AONB. Although the Council has said Wath Quarry is open, the information available to the operator from Tarmac (the operator of the site), is that this is sales from stock prior to mothballing of the site. The operator believes Hovingham Quarry is not viable to re-open given its poor access, the need for substantial investment in infrastructure and plant, and the low levels of reserves remaining to justify further investment.
36. Therefore, the sustainability alternatives considered in this statement are the other two operating quarries.
37. Settrington Quarry has stated in a recent planning application that it would produce between 60,000 tpa and 100,000 tpa. It has only about 120,000 tonnes of reserves remaining². It has an allocation in the JLP for 1.7 Mt, giving a total reserve of 1.82 Mt. It uses a narrow C class road on which is located a SINC, to access the B1248 in a westerly direction and travel through Norton along Mill Street, or a route through Settrington village and Scagglethorpe village on narrow minor roads involving sharp bends in an easterly direction to reach the A64 east of Malton. If Whitewall closes in 2023 and assuming Settrington has a permitted extension by that date, then it will have about 1.6 Mt reserves. If Settrington were to take all of Whitewall's market share, its production would rise to 240,000 tpa to 280,000 tpa.

² 2015 extension of time application stated that 4-5 yrs reserves remained at 60ktpa, i.e. to Dec 2019. Therefore, remaining reserve at end 2017 is estimated at 120ktpa.

Settrington has operational problems for working in winter since the site is flooded. Therefore, average daily traffic could rise along its route from between 12 trips per day to 56 trips per day assuming all year round working, but potentially rising to over 100 trips per day should working be restricted by on-site flooding. Moreover, its reserves would only last for under 6 years at the higher rate and it would be exhausted before the end of the plan period.

38. Newbridge Quarry produces an estimated 100,000 tpa to 120,000 tpa³. It is located close to the North Yorks Moors National Park. There are an estimated 2.0 – 2.5 Mt of reserves remaining due to lower production during the recession. It accesses the major road network by routing vehicles through the centre of Pickering including passing the entrance to the Pickering station of the popular North Yorks Moors Railway, plus a roadside SINC . If Whitewall closes in 2023 then Newbridge will have about 1.3 – 1.8 Mt reserves remaining. If Newbridge were to take all of Whitewall's market share, its production would rise to 300ktpa. This would raise HGV trips from the current 24 per day to 60 per day. At this rate, the reserves would be exhausted in 4-6 years, i.e. before the end of the plan period.
39. These impacts are confirmed in a delegated report (**Appendix 3**) on a planning application for an extension to Newbridge Quarry in October 2009 in which the officers stated in respect of the implications of refusing an extension to this quarry, *“Current supplies at Newbridge are virtually exhausted and the grant of planning permission for the extension for Newbridge Quarry would enable the site to continue its contribution to the mineral supply in the area in accordance with the principles of Policy ENV4 of the RSS. Otherwise the three other quarries that currently work the Jurassic limestone: Whitewall, Wath and Settrington would potentially have to meet the shortfall in supply, plus or minus a new site which would have implications for the longevity of those sites and environmental implication particularly in terms of traffic.”^A*
40. No matter where the aggregate alternatives to Whitewall are located, the current access route through Norton must be used by those alternatives to access development sites within Norton, and to some extent, Malton. The only saving of traffic by closing Whitewall prematurely would be that part of the aggregate output which goes beyond Norton and Malton to Scarborough and the rest of Ryedale district, plus some lime sales to the north of England and Scotland.
41. In terms of other products sold from Whitewall, the following is relevant,
- Readymix concrete – there is only one other concrete plant in Malton and that is Cemex's plant in Showfield Lane. The loss of the Whitewall plant would lead to reduced competition in the town and increased prices for concrete. The nearest alternative locations are in York or Scarborough.
 - Building Stone – Whitewall Stone is the only local source of limestone currently worked for dimension purposes. Stone from Wath Quarry is not preferred for historic repairs except in its immediate locality because it is too 'blue', and in any case the source is no

³ This is calculated by deducting Whitewall's current sales (180ktpa) from the NYCC 10 yr average sales of 360ktpa, leaving 180ktpa to be divided between Newbridge & Settrington. If Settrington sells 60ktpa, then by deduction Newbridge's market must be 120ktpa.

⁴ Delegated Items Report NY/2007/0150/ENV Planning application accompanied by an Environmental Statement for the purposes of a northerly extension for the working of limestone on land at Newbridge Quarry, Pickering; 19th October 2009; page 19

longer available. It is not clear if another stone could replace Whitewall and gain the necessary confidence of customers and specifiers.

- Concrete panels – the nearest alternative concrete panel plants are at Low Grange Quarry north of Scotch Corner, and at Selby (Bubworth).
- Agricultural Lime – there are alternative sources of agricultural lime such as supplied by Settrington and Newbridge.

42. W Clifford Watts submits that there are no clearly superior alternatives to supplying Jurassic limestone than allowing Whitewall quarry to extend.

The Suitability of the Site for the Supply of Building Stone

43. Research carried out by the Malton Stone Group (**Appendix 4**) on sources for historic repairs (unstated date but thought to be about 2008) states that the first stone buildings in Malton were constructed of Hildenley Limestone from the village of that name in the Howardian Hills. Being fine grained Hildenley limestone lends itself to intricate carving. The report says of Malton, *“All but one of the numerous stone-vaulted spaces investigated so far within the medieval boundary of the town were formed of either Malton oolite or Hildenley limestone”*. However, these quarries have been closed for several hundred years. In the eighteenth century calcareous sandstone began to be used for stone buildings in the town, in lieu of local limestone, because it was the fashion of the time. However, many villages were constructed in local limestone, all of which were varieties of Malton Oolite, which occurs at Whitewall Quarry.

44. The report mentions the source of stone from Whitewall but the report is in error in claiming it is not commercially available. It says, *“The only local source of oolitic limestone at present is from Whitewall quarry, where road-stone is produced by blasting and from which building stone has to be hand-picked and is not commercially available.”*

45. The report also appears to be unaware of the larger scale use of the stone from Whitewall for new build operations but usefully mentions the location of alternatives to Whitewall stone, *“For small-scale repairs to oolitic limestone buildings in Malton, hand-picked stone from Whitewall quarry may be appropriate, but this will usually require hand-dressing as well as locating in random piles of material awaiting crushing for aggregates. For larger-scale works, the most appropriate sources are likely to be quarries in the Cotswolds, a significant distance, involving significant embodied energy.”*

46. The company can confirm that the stone from Whitewall is blasted and then hand-picked for delivery or collection. Although it is not probably suitable for detailed carving, it is eminently suitable for walling stone.

47. The stone’s main customer, Drings has provided examples of where the Whitewall stone has been used most recently. This is for a variety of structural work including public buildings and house extensions. Clearly, this would not happen if it was as bad as critics of the quarry assert. A selection of some of these examples are as follows,

- Sinnington Village Hall – new single storey extension built with limestone ashlar blocks and sandstone quoins and window detail.



- Bungalow in Back Lane, Harome – built for about 10 years. Garage is more recent.



- House and Extension at Hulver Bank, Starfitts Lane, Kirbymoorside – built more than 10 years ago; extension completed 6 months ago.



Whitewall Quarry, Norton

Noise Monitoring Report

Report ref.

PMS4029/15476/Rev 1

Issued to

North Yorkshire County Council

Prepared by

Paul Scourfield BEng(hons) MIOA
Principal Consultant

Version	Remarks	Date
First Issue	-	August 2016
Rev 1	Minor typing corrections	Sept 2016



SECTION	TITLE	PAGE
0.	SUMMARY	1
1.	INTRODUCTION.....	3
2.	SITE DESCRIPTION.....	3
3.	PLANNING CONDITIONS.....	4
4.	NOISE ASSESSMENT GUIDELINES	5
4.1	NATIONAL PLANNING POLICY FRAMEWORK (NPPF).....	5
5.	NOISE MEASUREMENT SURVEY	7
5.1	METHODOLOGY	7
5.2	MEASUREMENT RESULTS.....	9
6.	BACKGROUND NOISE LEVEL/ASSESSMENT CRITERIA	10
7.	ASSESSMENT	13
7.1	DAYTIME OPERATIONS.....	13
7.2	EARLY MORNING OPERATIONS.....	16
8.	CONCLUSIONS.....	17
APPENDIX A:	Site Location Plans	
APPENDIX B:	Noise Measurement Results	
APPENDIX C:	Weather Data	

0. SUMMARY

- Within Whitewall Quarry, Norton, there are various activities including mineral extraction, concrete batching, concrete panel manufacturing and recycling of inert construction waste. There are planning conditions on a number of the uses, relating to the background noise level at nearby noise sensitive locations.
- Following a background survey carried out in December 2015 / January 2016, North Yorkshire County Council commissioned Spectrum to carry out a noise monitoring survey during quarry operations, which was carried out between 13th – 27th July 2016.
- Noise monitors were installed at three locations between 13th – 27th July 2016, along with one weather station. Manned noise measurements were also recorded on 13th and 27th July.
- During the measurement period weather conditions were generally good and suitable for noise measurements. However wind speeds were high on three working days – Friday 15th July, Saturday 16th July and Monday 25th July. The measurements recorded on these days have therefore been excluded from the analysis.
- The planning conditions for the various uses at the Whitewall Quarry site have been reviewed, alongside the latest guidance contained in the National Planning Policy Framework and the Planning Practice Guidance.
- On the basis of these documents and background noise levels measured in December 2015 / January 2016 and during the latest surveys in July 2016, daytime noise limits from the Whitewall Quarry operations, after corrections for extraneous noise, of 48dB(A) $L_{Aeq,1h}$ at the properties on Welham Road and 47dB(A) $L_{Aeq,1h}$ at the properties on Whitewall are proposed. For early morning operations between 06.30 – 07.00 the night-time noise targets detailed in the Planning Practice Guidance are considered to apply, giving a noise limit from the Whitewall Quarry operations, after corrections for extraneous noise, of 42dB(A) $L_{Aeq,1h}$ at all residences to the north of the site.
- During manned measurements on 13th and 27th July, noise levels at the nearest residences to the north of the quarry site were dominated by road traffic noise. Noise from the quarry site was occasionally audible, though not dominant when compared to road traffic noise.
- The assessment of the noise levels recorded at the Rear of Whitewall Stables and 187 Welham Road positions are affected by road traffic on Welham Road, in particular the measurements at 187 Welham Road. However, the noise measurements recorded at the Rear of Whitewall Stables indicate that the contribution of noise from the quarry meets the noise limit of 47dB(A) $L_{Aeq,1h}$.
- Noise levels recorded at the North-East corner of the quarry site are less affected by road traffic noise, being generally dominated by noise from the operations at Whitewall Quarry. Therefore the noise levels measured at the quarry can be used to indicate the impact of the quarry at the residences.
- The measurements at the quarry position indicate a maximum contribution at the residences from Whitewall Quarry sources during the daytime in the range 34-42dB(A) $L_{Aeq,1h}$. Such levels are within the daytime noise limits at the residences to the north of the site of 47-48 dB(A) $L_{Aeq,1h}$.

- Measurements at the quarry position during a two hour period on 18th July were slightly higher than the typical maximum levels, indicating a maximum contribution at the residences of 44dB(A) $L_{Aeq,1h}$. Whilst this level remains within the daytime noise limit, it is likely that the noise source was the concrete panel operation which has higher levels of screening from the residences compared to the minerals operation, with the contribution at the residences likely to remain in the range 34-42dB(A) $L_{Aeq,1h}$.
- The measurements at the quarry position indicate a maximum contribution at the residences from Whitewall Quarry sources during the early morning period 06.30-07.00 in the range 31-36dB(A) $L_{Aeq,30m}$. Such levels are within the night-time noise limit of 42dB(A) $L_{Aeq,1h}$.

7. ASSESSMENT

For daytime operations, the assessment has been carried out by comparing the measured 1 hour L_{Aeq} levels with the noise limits discussed in section 6 of this report. In order to carry out the assessment, the noise measurements need to be corrected for the effects of extraneous noise, where appropriate.

The extraneous noise generally falls into two categories. The first is isolated non-quarry events causing an increase in measured noise levels. It was noted during the manned survey on 13th July that aircraft noise is significant in the vicinity of the site. This includes fighter jets which it is understood regularly train in the area, light aircraft from a local airfield, as well as occasional passenger planes.

During the measurement survey on 13th July fighter jets passed overhead at approximately 12.10. During the 1 hour period between 12-13.00 the measured L_{Aeq} at the Rear of Whitewall Stables was 9-10 dB(A) above those recorded between 13-16.00, due to the contribution of the fighter aircraft.

Also during the afternoon of 13th July local light aircraft were circulating in the vicinity of the site. Rather than passing they stayed in the area for an extended period of time, sometimes performing aerobatics. This again affected the noise readings during these time periods, increasing noise levels, for example during the manned reading carried out to the rear of Whitewall Stables at 13.19.

Measurements affected by these events need to be excluded from the analysis. They have been identified by looking for unusual peaks in the L_{Aeq} measurements, identifying time periods at which shorter term high noise levels occur, and listening to the audio recordings obtained at the Whitewall Stables location to identify the noise source. Using this method, 18 measurements have been excluded from the analysis over the three positions. This leaves the majority of the measurements for consideration in the analysis.

The second category of extraneous noise comprises more continuous sources such as road traffic. Road traffic noise affects the noise measurements recorded at the rear of Whitewall Stables and at 187 Welham Road. It is also the dominant background noise source affecting residences to the north of the quarry site. Welham Road itself is fairly busy and the dominant source of local road traffic. Distant road traffic is also audible at these locations.

During the manned measurements at Whitewall Stables on 13th and 27th July, local/distant road traffic was noted as the dominant noise source. Noise from the quarry was only occasionally audible, generally during lulls in road traffic, and even when it was audible it was considered "faintly audible" and not a dominant noise source. It is therefore considered that the measurements at the rear of Whitewall Stables and at 187 Welham Road need to be corrected for the influence of road traffic noise.

7.1 DAYTIME OPERATIONS

At the Rear of Whitewall Stables position, after excluding noise measurements recorded on 15th, 16th and 25th July when wind levels exceeded 5m/s, and also those 1 hour measurements when extraneous events such as jet aircraft affected the measurements, the measured noise levels are in the range 43-49dB(A) $L_{Aeq,1h}$ during daytime operation.

The residual noise level in the absence of quarry operations has been considered by reviewing the measurements recorded in the breaks on 13th, 20th, 22nd, 26th and 27th of July between 12.30-13.00. Measured L_{Aeq} levels during these time periods are in the range 43-46 dB(A) $L_{Aeq, 30m}$, with typical (mode) levels of 45 / 46dB(A) L_{Aeq} . However it is noted that the contribution of road traffic at this measurement location is sometimes higher. For example during the manned measurement survey on 13th July, the measured level reached 51dB(A) $L_{Aeq, 5m}$, at 16.40. During this measurement local road traffic was the dominant noise source, with the quarry generally not audible.

Taking the typical residual noise level measured during the quarry breaks of 45/46 dB(A) L_{Aeq} , from the measured levels of 42-49dB(A) L_{Aeq} , indicates a maximum contribution from the quarry of 46-47 dB(A) $L_{Aeq, 1h}$. This level meets the noise limit at Whitewall of 47dB(A) $L_{Aeq, 1h}$.

However, it is considered that the contribution of noise from the quarry at the Whitewall Stables position is in fact lower, with road traffic likely to be the dominant noise source in the measurements, as noted during the manned measurements, causing the higher measured noise levels at the top end of the 43-49dB(A) L_{Aeq} range.

During the two manned measurement surveys, noise levels measured at the Rear of Whitewall Stables were typically in the range 40-46dB(A) L_{Aeq} , during quarry operation, again falling within the noise limit of 47dB(A) $L_{Aeq, 1h}$. During these measurements the main noise source was noted as local road traffic, with the contribution of the quarry lower than the measured values. Measured levels at this position exceed this range during four measurements, reaching 48-53 dB(A) L_{Aeq} . However, this was due to extraneous noise sources including aircraft, a local lawn strimmer and road traffic.

At the 187 Welham Road position, after excluding noise measurements recorded on 15th, 16th and 25th July when wind levels exceeded 5m/s, and also those 1 hour measurements when extraneous events such as jet aircraft affected the measurements, the measured noise levels are in the range 48-53dB(A) $L_{Aeq, 1h}$ during daytime operation.

The contribution of road traffic to the measured noise levels is significantly higher at this position, due to the proximity of Welham Road. The residence at this location is the closest to the Whitewall Quarry site. However during the manned survey it was noted that local road traffic is the dominant noise source. Whilst noise from the quarry was faintly audible at this location, generally during lulls in road traffic, it was only occasionally audible and was not considered to be a significant noise source compared to road traffic.

During the background survey on 29th December 2015, the mean residual L_{Aeq} noise level at the Welham Road position was 51 dB(A) L_{Aeq} , with a mode of 52 dB(A) L_{Aeq} . The residual noise levels recorded in the breaks on 13th, 20th, 22nd, 26th and 27th of July between 12.30-13.00 have also been considered. Measured L_{Aeq} levels during these time periods are in the range 48-51 dB(A) $L_{Aeq, 30m}$, with typical (mode) level of 50dB(A) L_{Aeq} . However it is noted that the contribution of road traffic at this measurement location is sometimes higher. For example, it can be seen the measured levels at this location reach 53-55dB(A) $L_{Aeq, 1h}$ between 17.00 – 19.00, after quarry operations have ceased. It is therefore difficult to assess the impact of the quarry from the measurements recorded at this position.

The measurements recorded at the North East corner of the quarry are generally less affected by road traffic noise, being generally dominated by noise from the Whitewall Quarry site. This is due to the increased distance to Welham Road, the closer proximity of the quarry operations and also because there is no screening between the quarry activities and the measurement position. The noise measurements at this position can therefore be used to indicate the contribution of quarry activities to the noise levels at the residences to the north of the site. After excluding noise measurements recorded on 15th, 16th and 25th July when wind levels exceeded 5m/s, and also those 1 hour measurements when extraneous events such as jet aircraft affected the measurements, the measured noise levels at the North-East corner of the quarry are generally in the range 42-55dB(A) $L_{Aeq,1h}$ during daytime operation, with typical maximum levels in the range 47-55dB(A) $L_{Aeq,1h}$.

The residences to the north are significantly screened from the operations in the quarry site. The floor of the quarry is approximately 30m below the surrounding area. In addition, the residences to the north of the site are approximately 10-15m below the northern boundary, increasing the screening effect. The quarry access road is also screened from the residences. With no direct line of sight it is considered that the minimum screening effect is 10dB(A), with some operations having a screening effect in excess of 15dB(A).

The measurement position at the North-East corner of the quarry is significantly closer to the concrete panel operations than the residences, at approximately 100m compared to approximately 300m to the nearest residence. The main quarry extraction areas are approximately 350-400m from the North-East Quarry measurement position compared to 550-600m to the nearest residence. The additional distance will reduce noise levels from these sources by a further 3-10dB(A).

Due to these factors measured 1 hour noise levels from quarry sources at the nearest residences are likely to be 13 - 25dB(A) below the levels measured at the North East Corner of the Quarry site. Taking the minimum reduction of 13dB(A), this indicates a typical maximum contribution at the residences from quarry sources in the range 34-42dB(A) $L_{Aeq,1h}$. Such levels are within the daytime noise limit of 47-48 dB(A) $L_{Aeq,1h}$ at the nearest residences.

During a limited period on 18th July measured noise levels at the Quarry position are higher, reaching 56-57 dB(A) L_{Aeq} between 09.00-11.00. It is noted that noise levels at the Rear of Whitewall Stables and Welham Road positions do not show an increase during this time period, reaching 47dB(A) and 51dB(A) L_{Aeq} respectively. Considering the minimum reduction of 13dB(A) discussed above, the maximum contribution at the residences during this time period would be 44dB(A) $L_{Aeq,1h}$ which again falls within the noise limit of 47-48 dB(A) $L_{Aeq,1h}$ at the nearest residences. However with no matching increase in measured noise levels at the Whitewall Stables and Welham Road positions, it is likely that the noise source is the concrete panel operation, which is closest to the quarry measurement position, and has higher levels of screening, towards 15dB(A). The maximum contribution of quarry operations at the residences to the north during this time period is therefore likely to remain with the range 34-42dB(A) $L_{Aeq,1h}$.

The impact of the screening/distance factors was noted during the manned surveys. At the position at the North-East corner of the Quarry the quarry operations are clearly audible and are generally the dominant source, with noted noise sources including mineral extraction operations, HGV movements, concrete panel operations (fork lift truck movements, lorry movements/loading, saw operations), concrete mixer movements. As you walk towards the residences to the north from this position the noise from the quarry quickly reduces due to the screening. Within 50-100m from the boundary the quarry is not clearly audible.

By the time you reach the residences to the north road traffic is the dominant noise source, with the quarry only faintly audible on occasion.

7.2 EARLY MORNING OPERATIONS

As discussed in section 6 of this report, the early morning operations between 06.30-07.00 are assessed against a different criterion as this time period falls within the “night-time” period in the Planning Policy Guidance.

At the Rear of Whitewall Stables position, after excluding noise measurements recorded on 15th, 16th and 25th July when wind levels exceeded 5m/s, and also those measurements when extraneous events affected the measurements, the measured noise levels are in the range 41-47dB(A) $L_{Aeq,30m}$ during early morning operation.

In order to assess the effect of extraneous noise, which is expected to be dominated by road traffic, the L_{Aeq} noise level in the half hour period between 06.00-06.30 before the quarry opens has been considered. The levels between 06.00-06.30 are similarly in the range 41-47dB(A) $L_{Aeq,30m}$. This again indicates that measured levels are dominated by road traffic, making it difficult to make an accurate assessment of the impact of the quarry itself.

Similarly at the 187 Welham Road measurement position, measured noise levels are in the range 49-52dB(A) $L_{Aeq,30m}$ between 06.30-07.00 and 45-50dB(A) $L_{Aeq,30m}$ between 06.00-06.30. Allowing for the fact that road traffic levels will be progressively increasing at this time of day, it is again difficult to make an accurate assessment of the impact of the quarry itself at this position on the basis of these measurements. It should also be noted that the levels measured at this position between 06.30-07.00 are higher than those measured at the North-East corner of the Quarry. This again indicates that the noise levels measured at 187 Welham Road during this period are dominated by road traffic noise.

Measured levels at the North-East corner of the Quarry have again been considered, with these readings less affected by road traffic noise. During the 6.30-7.00 period, noise levels at the North-East corner of the quarry are in the range 44-49 dB(A) $L_{Aeq,30m}$. Considering the screening and additional distance discussed above, with a minimum reduction of 13dB(A) between the levels measured at the quarry position and those at the residences, the contribution at the residences from the quarry is likely to be in the range 31 – 36dB(A) $L_{Aeq,30m}$ during the 06.30-07.00 time period. Such levels fall within the early morning noise limit of 42dB(A) $L_{Aeq,1h}$.



8. CONCLUSIONS

The planning conditions for the various uses at the Whitewall Quarry site have been reviewed, alongside the latest guidance contained in the National Planning Policy Framework and the Planning Practice Guidance.

On the basis of these documents and background noise levels measured in December 2015 / January 2016 and during the latest surveys in July 2016, daytime noise limits for Whitewall Quarry operations, after corrections for extraneous noise, of 48dB(A) $L_{Aeq,1h}$ at the properties on Welham Road and 47dB(A) $L_{Aeq,1h}$ at the properties on Whitewall are proposed. For early morning operations between 06.30 – 07.00 the night-time noise limit detailed in the Planning Practice Guidance is considered to apply, giving a noise limit for Whitewall Quarry operations, after corrections for extraneous noise, of 42dB(A) $L_{Aeq,1h}$ at all residences to the north of the site.

During manned measurements on 13th and 27th July, noise levels at the nearest residences to the north of the quarry site were dominated by road traffic noise. Noise from the quarry site was occasionally audible, though not dominant when compared to the road traffic noise.

The assessment of the noise levels recorded at the Rear of Whitewall Stables and 187 Welham Road positions are affected by road traffic on Welham Road, in particular the measurements at 187 Welham Road. However, the noise measurements recorded at the Rear of Whitewall Stables indicate that the contribution of noise from the quarry meets the noise limit of 47dB(A) $L_{Aeq,1h}$.

Noise levels recorded at the North-East corner of the quarry site are less affected by road traffic noise, with quarry operations dominating measured noise levels at this position. In addition, whilst the residences to the north of the site are screened from the quarry, the quarry measurement position is not screened. Therefore the noise levels measured at the quarry position can be used to indicate the impact of the quarry at the residences.

The measurements at the quarry position indicate a typical maximum contribution at the residences from Whitewall Quarry sources during the daytime in the range 34-42dB(A) $L_{Aeq,1h}$. Such levels are within the daytime noise limit of 47-48 dB(A) $L_{Aeq,1h}$.

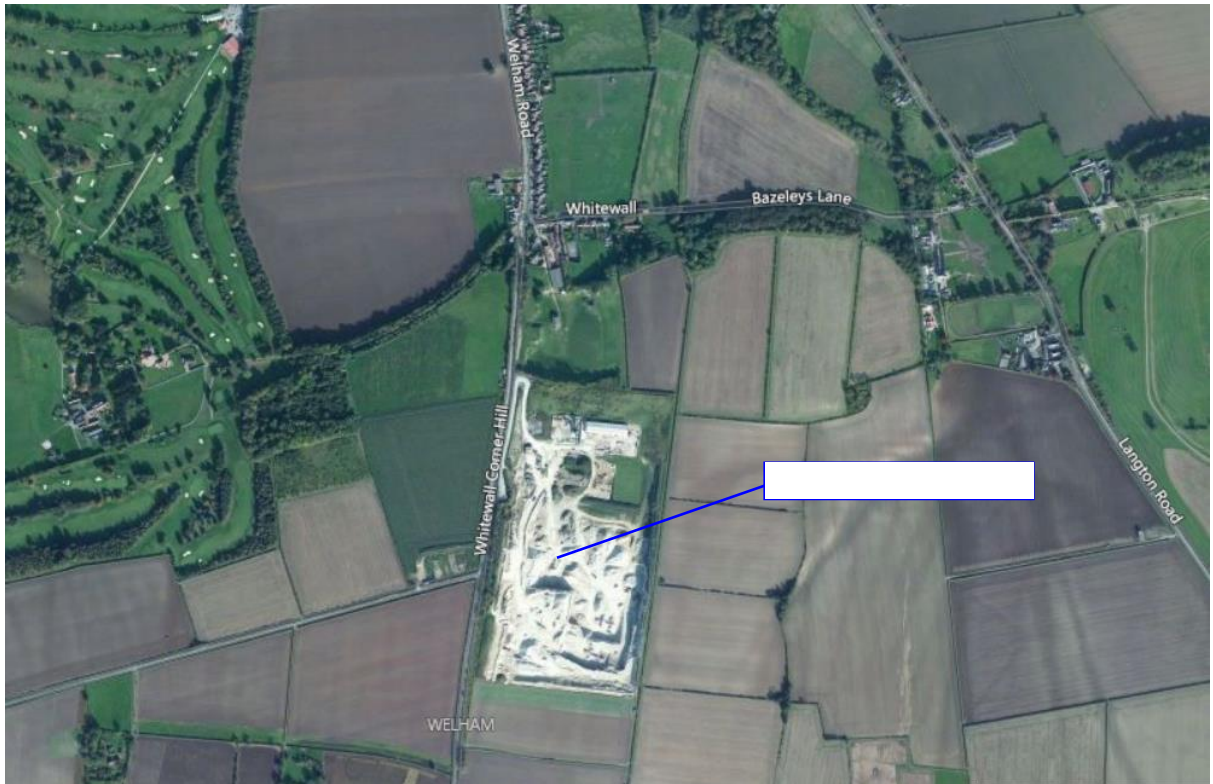
Measurements at the quarry position during a two hour period on 18th July were slightly higher than the typical maximum levels, indicating a maximum contribution at the residences of 44dB(A) $L_{Aeq,1h}$. Whilst this level remains within the daytime noise limit, it is likely that the noise source was the concrete panel operation which has higher levels of screening from the residences compared to the minerals operation, with the contribution at the residences likely to remain in the range 34-42dB(A) $L_{Aeq,1h}$.

The measurements at the quarry position also indicate a maximum contribution at the residences from Whitewall Quarry sources during the early morning period 06.30-07.00 in the range 31-36dB(A) $L_{Aeq,30m}$. Such levels are within the night-time noise limit of 42dB(A) $L_{Aeq,1h}$.

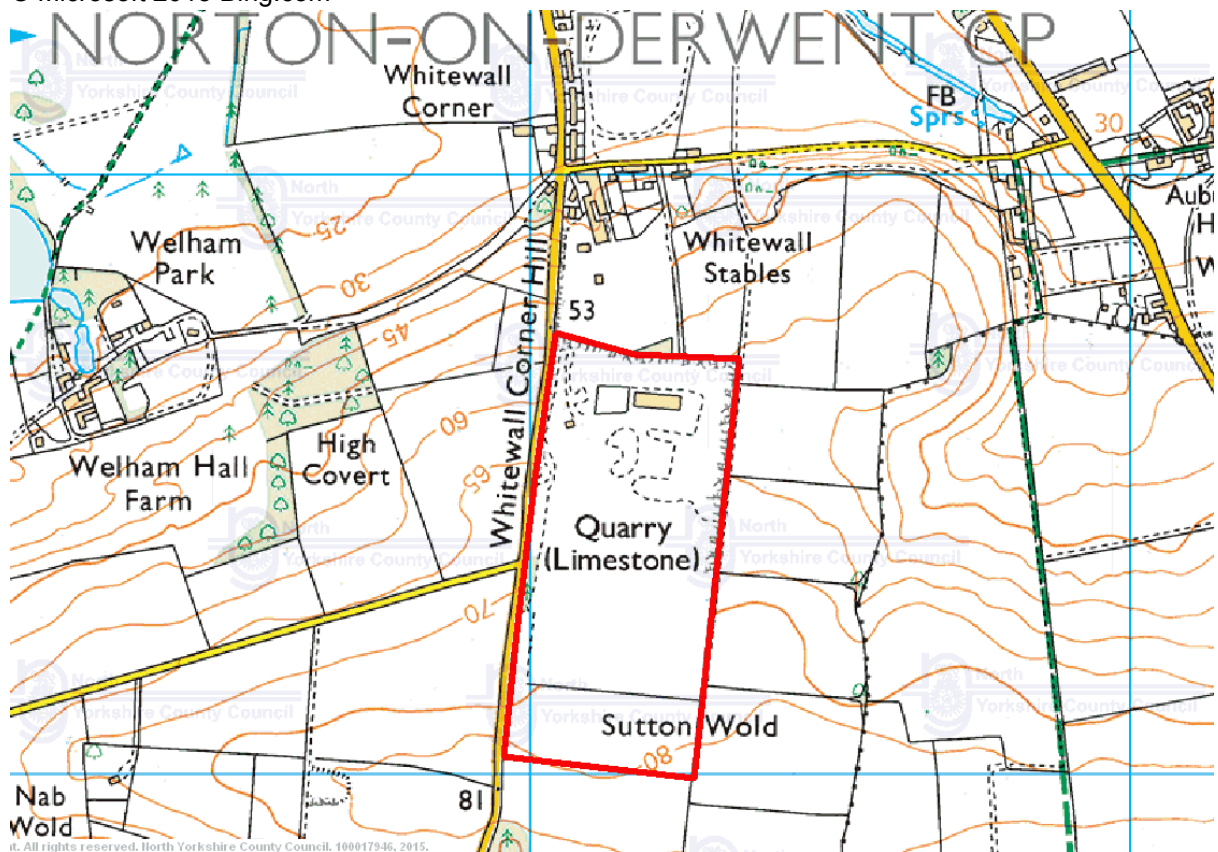
The conclusions above confirm the subjective impression during the manned measurement surveys that the noise impact of the Whitewall Quarry site at the residences to the north is acceptable, with quarry noise sources only faintly audible on occasion.

APPENDIX A

Site Location Plans



© Microsoft 2015 Bing.com



it. All rights reserved. North Yorkshire County Council, 100017946, 2015.

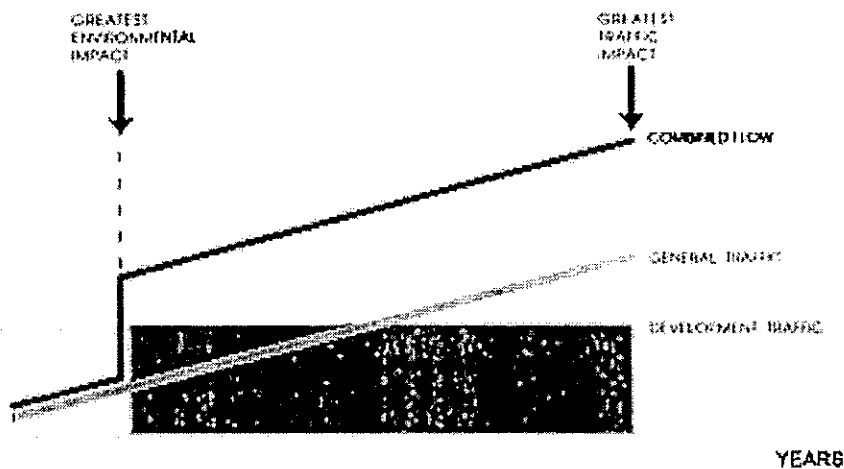


Guidelines for the Environmental Assessment of Road Traffic

Institute of Environmental Assessment

Environmental and Traffic Impacts from a New Development

TRAFFIC LEVELS



Geographical Boundaries of Assessment

3.14 An important prerequisite of the environmental assessment is to determine the geographical boundaries of the assessment. This is not an easy task. For example, different projects will give rise to different levels of traffic attraction and vary in the geographical extent of their traffic and environmental impact. If a project attracts only a small number of additional trips which take place on routes already heavily trafficked, then it is unlikely that there will be a need for a detailed environmental assessment of traffic. On the other hand, a single lorry movement arising at a works may be perceived as a source of nuisance when it takes place at 05.00 in the morning. Judgements will inevitably be required to define the geographical boundaries of the assessment. Such judgements will tend to be based upon a combination of experience and implicit assumptions, however, it is important that these assumptions are made explicit in the Statement.

3.15 To assist the assessor it is suggested that two broad rules-of-thumb could be used as a screening process to delimit the scale and extent of the assessment. The rules are described and justified in the following paragraphs:

include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%)

include any other specifically sensitive areas where traffic flows have increased by 10% or more.

Rule 1

3.16 Traffic forecasting is not an exact science and the accuracy of projections is open to debate. It is generally accepted that accuracies greater than 10% are not achievable. It should also be noted that the day-to-day variation of traffic on a road is frequently at least some + or -10%. At a basic level, it should therefore be assumed that projected changes in traffic of less than 10% create no discernible environmental impact. The cumulative effect of a number of developments attracting less than 10% of additional traffic may need to be assessed at a broader strategic or policy level.

3.17 Previous research has identified that the most discernible environmental impacts of traffic are noise, severance, pedestrian delay and intimidation (Hedges, 1978). Generally, people cannot perceive a change in noise nuisance for changes in noise levels of less than 3 dB(A); such change requires a doubling or halving in the level of traffic. Recent research (Baughan and Huddart, 1992) is tending to suggest that this threshold is likely to be reduced to 1 dB(A). At low flows, increases in traffic of around 30% can double the delay experienced by pedestrians attempting to cross a road (DoT, 1983). Whether this is significant in absolute terms requires further consideration (see 3.19). Severance and intimidation are, however, much more sensitive to traffic flow and the Department of Transport, in its MEA, has

assumed that 30%, 60% and 90% changes in traffic levels should be considered as "slight", "moderate" and "substantial" impacts respectively.

3.18 It should be noted that the Department of Environment suggests, in Policy Planning Guidance Note 13 (DOE, 1988), that increases in traffic of 5% are likely to be considered as significant by the Department of Transport. The context of such a statement relates to the operational and capacity criteria of highway and not its environmental impacts. It is recommended that the criteria set out in these paragraphs are more relevant to the assessment of environmental impacts and hence the higher thresholds are more relevant.

3.19 Other environmental impacts, (eg. pollution, ecology, etc.) are less sensitive to traffic flow changes, and it is recommended that, as a starting point, a 30% change in traffic flow represents a reasonable threshold for including a highway link within the assessment. Where there are major changes in the composition of the traffic flow, say a much greater flow of HGV's, a lower threshold may be appropriate. An example of the sensitivity of environmental conditions to changes in traffic flow is illustrated below.

 +-----+
 | A major new industrial plant attracts 150 vehicles per hour. The traffic follows a single route to reach
 the |
 | major highway network. An initial indication of environmental impact is tabulated below. |
 +-----+

Road	Flow (vehicles/hour)				Severance Impact (1)	Noise Impact	Link to be assessed under "Rule 1"
	Base	Development	Total	% Increase			
A	150	150	300	100%	Substantial	Perceivable	Yes
B	400	150	550	40%	Slight	Not Perceivable	Yes
C	800	150	950	19%	Less slight	Not Perceivable	No

(Key: A - Access Road, B - Local Distributor, C - Main Road)

Rule 2

3.20 The assessor should include any other link or location where it is felt that specific environmental problems may occur. If these guidelines have been followed the assessor would already have compiled a list of potentially affected group and special interests (paragraph 2.4) and this would be the starting point. Locations would include accident black-spots, conservation areas, hospitals, links with high pedestrian flows, etc. Normally it would not be appropriate to consider links where traffic flows have changed by less than 10% unless there are significant changes in the composition of traffic, eg. a large increase in the number of heavy goods vehicles.

(1) As defined by DTp.

Summary

- The environmental impact of traffic will be dependent upon existing conditions and adjacent land uses as well as changes in traffic levels.
- Assessments should consider the period (possibly the hour) at which the impact is greatest and the period at which the impacts exhibit the greatest change.
- Peak environmental impacts may well occur at times other than the “peak hour”, and traffic assessments may need to be undertaken for a number of time periods.
- Environmental Assessments may need to be undertaken separately for different phases in the life of the project.
- Assessment should be undertaken in the year of opening (or first year of a phase) when, generally, the perceived environmental impact is at its greatest. As a guide, highway links should be separately assessed when:
 - traffic flows have increased by more than 30%
 - or -other sensitive areas are affected by traffic increases of at least 10%
 - or -HGV flows have increased significantly.

4.16 The draft PPG also defined separate noise exposure categories for night time noise to dwellings and for noise to schools. Standards for noise exposure in open space were established by the GLC.

4.17 Guidance is given in the PPG on the noise from single events during the night-time. This relates to a regularly occurring event and may be adopted in respect of heavy goods vehicles. The noise level of a single event exceeding an LAeq (1 sec) of 82 DB should be treated as Category C, unless the overall night-time period noise level is already in Category D.

4.18 The assessor will need to decide which threshold should be used in any assessment, and must clearly state the values and the source of any such standards. The Environmental Statement must identify which properties and how many pedestrians and other sensitive groups are affected.

Vibration

4.19 New developments which attract HGVs, tend to create concern from local residents about the possible damage to property resulting from vibration. This concern may be heightened where the existing roads or local network are poorly maintained, and people hear and experience the effects of lorries passing over ruts and holes in the road surface.

4.20 There are numerous studies which have investigated this topic, and where concern about building damage from vibration is identified, these sources should be consulted (TRRL 1990, BRE 1990). However, research studies have so far been unable to show that traffic induced ground borne vibration results in structural damage to buildings, although surface damage, such as cracking of plaster, may occur in sensitive properties.

4.21 Airborne vibration (infra-sound) can lead to a number of effects, such as window rattling and floor movement, and this may concern people living adjacent to roads particularly where there is a large increase in lorry traffic.

4.22 Notwithstanding the lack of technical research to link vibration to structural damage, vibration can materially effect the quality of life of the occupant of such properties and as such may need to be examined.

4.23 Given the complex nature of the problem, expert advice should be obtained where such effects are likely to be considered to be significant.

Visual Effects

4.24 The term visual impact within MEA includes both visual obstruction and visual intrusion. Obstruction refers to the blocking of views, by structures for example, and intrusion refers to the more subjective impact by traffic on an area of scenic beauty or of historical or conservation interest.

4.25 Increases in the number of large or high-sided vehicles may have an intrusive impact in areas of scenic beauty and in historic or conservation areas. Such impacts should be noted and their effects described. This may include determining the visibility of vehicles from surrounding vantage points, e.g. hillsides, and the obtrusiveness in different settings, e.g. narrow streets.

4.26 The detailed appraisal of the visual impact of traffic is complex. In most situations for which these guidelines will be used, the changes in traffic resulting from a development will have little additional impact.

Severance

4.27 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. The term is used to describe a complex series of factors that separate people from places and other people. Severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself. It can also relate to quite minor traffic flows if they impede pedestrian access to essential facilities. Severance effects could equally be applied to residents, motorists or pedestrians.

4.28 The measurement and prediction of severance is extremely difficult. The correlation between the extent of severance and the physical barrier of a road is not clear and there are no predicative formulae

which give simple relationships between traffic factors and levels of severance. In general, marginal changes in traffic flow are, by themselves, unlikely to create or remove severance.

4.29 Factors which need to be given attention in determining whether severance is likely to be an important issue include road width, traffic flow and composition, traffic speeds, the availability of crossing facilities and the number of movements that are likely to cross the affected route.

4.30 Different groups in a community may be more affected by severance than others. Old people or young children may be more sensitive to traffic conditions than others. An assessment of severance should aim to estimate the current severance caused by traffic and related factors, and the extent to which additional traffic will exacerbate this problem. Where severance is thought likely to require more detailed investigation, it is recommended that the Manual of Environmental Appraisal is consulted, as well as a recent report from TRL (TRL, 1991a), which outlines a comprehensive procedure for determining the extent of severance. The assessment involves:

- (i) defining the facilities to which access is potentially impaired
- (ii) defining facility catchment areas from which users may be drawn
- (iii) estimating the populations within those areas, both in total and in vulnerable groups.

4.31 The MEA sets out a range of indicators for determining the significance of the relief from severance. Changes in traffic flow of 30%, 60% and 90% are regarded as producing "slight", "moderate" and "substantial" changes in severance respectively. These figures have been derived from studies of major changes in traffic flow and therefore should be used cautiously in any environmental assessment. The assessment of severance should pay full regard to specific local conditions, e.g. whether crossing facilities are provided or not, traffic signal settings, etc.

Driver Delay

4.32 Within the assessment of a new highway, the valuation of delays or benefits occurring to road users is included in the transport economic evaluation of the scheme. No such economic evaluation is generally undertaken for a single new development, so it is important that these effects should be specifically identified within the environmental assessment.

4.33 Traffic delays to non-development traffic can occur at several points on the network surrounding the site including:

- at the site entrance where there will be additional turning movements
- on the highways passing the site where there is likely to be additional traffic and the flow might be affected by additional parked cars
- at other key intersections along the highway which might be affected by increased traffic
- at side roads where the ability to find gaps in the traffic may be reduced, thereby lengthening delays.

4.34 Values for delay due to these elements can be determined by the use of the Department of Transport's computerised junction assessment packages (e.g. ARCADY for roundabouts, PICADY for priority junctions and OSCADY for traffic signalised intersections) or other suitable programs. Each package produces estimates of vehicle time and delay through the junction and hence, by testing each intersection for the base-line condition and with the development, it is possible to estimate increased vehicle delays. These delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.

Pedestrian Delay

4.35 Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads. In general, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend upon the general level of pedestrian activity, visibility and general physical conditions of the site.

4.36 The Manual of Environmental Appraisal sets out a predictive method for determining the mean delay experienced by pedestrians for different types of crossing for different levels of traffic flow (Goldschmidt, 1976). This method provides a useful approximation for determining the likely levels of pedestrian delay at different traffic levels.

4.37 The MEA does not suggest any thresholds for judging the significance of absolute or actual changes in levels of delay. Various thresholds have been suggested over the years (GLC 1975, Headicar 1979), although these have not been based upon any clearly defined empirical investigations. More recently, work (HFA, 1990) has suggested a lower threshold of 10 seconds delay and an upper threshold of 40 seconds delay which, for a link with no crossing facilities, equates to the lower threshold of a two-way flow of about 1400 vehicles per hour. Given the range of local factors and conditions which can influence pedestrian delay, it is not considered wise to set down any thresholds but instead it is recommended that assessors use their judgement to determine whether pedestrian delay is a significant impact.

4.38 In order to determine the number of pedestrians crossing the road, or walking along pavements it is recommended that sample counts be taken, either using video or manual methods.

Recent work (TRRL, 1991) relating to pedestrian movements both along and across the highway, has shown that three 20 minute sample counts undertaken during the morning peak, morning and afternoon off-peak can be used to achieve a reliable grossing-up of daily flows.

Pedestrian Amenity

4.39 The term pedestrian amenity is included in the MEA. It is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic. This definition also includes pedestrian fear and intimidation, and can be considered to be a much broader category including consideration of the exposure to noise and air pollution, and the overall relationship between pedestrians and traffic. The MEA suggests that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or its lorry component) is halved or doubled.

Fear and Intimidation

4.40 A further impact traffic may have on pedestrians is fear and intimidation. The impact of this is dependent on the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by such factors as narrow pavement widths. Whilst this danger has been recognised as an important environmental impact for many years, there are no commonly agreed thresholds for estimating levels of danger, or fear and intimidation, from known traffic and physical conditions.

4.41 In the absence of commonly agreed thresholds, recent work (HFA 1990) which put forward thresholds for fear and intimidation based upon an earlier study (Crompton and Gilbert, 1976) can be useful. These thresholds define the degree of hazard to pedestrians by average traffic flow, 18 hour heavy vehicle flow and average speed over an 18 hour day in miles/hour. It is considered that thresholds, set out below, could be used as a first approximation of the likelihood of pedestrian fear and intimidation, although other factors need to be included, e.g. proximity to traffic, pavement widths. Whilst most of these factors can be quantified there will be a need for judgement to be exercised in determining the degree of fear and intimidation. Special consideration should be given to areas where there are likely to be particular problems such as high speed sections of road, locations of turning points and accesses. Areas exposed to higher than average levels of school children, the elderly or other vulnerable groups should be separately identified. The movement of hazardous loads will heighten people's perception of fear and intimidation and if this is likely to occur it should be noted.



North

Yorkshire County Council

Business and Environmental Services

Your ref:

Our ref: NY/2007/0150/ENV

Contact: Rachel Pillar

Ext: 0845 8 727374

Planning Services

Trading Standards and Planning Services
County Hall, Northallerton
North Yorkshire DL7 8AH
Tel: 08450 349494
Fax: 01609 532540
E-mail: planning.control@northyorks.gov.uk
www.northyorks.gov.uk

19 October 2009

LIST OF ITEMS TO BE DEALT WITH UNDER THE SCHEME OF DELEGATION

C3/07/00515/CPO

(nycc ref:NY/2007/0150/ENV)

Planning application accompanied by an Environmental Statement for the purposes of a northerly extension for the working of limestone on land at Newbridge Quarry, Pickering (Pickering Electoral Division - Ryedale District)

Background

Newbridge Quarry is a limestone quarry located 1 kilometre to the north of Pickering in the District of Ryedale. It covers an area of approximately 60 hectares, with the workings advancing in a northerly direction adjacent to Swainsea Lane, and away from Pickering. The original quarry was developed in a valley feeding into Newton Dale and is currently occupied by site administrative and ancillary quarrying infrastructure. To the west of the site reception area, the land rises steeply from around 38 metres Above Ordnance Datum (AOD) to around 76 metres AOD, before falling away into the quarry workings. Limestone has been extracted from the southern part of the quarry workings, forming a triangular shaped bowl, with a floor level of around 46 metres AOD at the southern edge rising to 54m AOD at the apex. The top of the quarry face on the southern boundary is generally at an elevation of 68 metres AOD, with levels steadily rising along the western boundary, adjacent to Swainsea Lane, reaching an elevation of around 89 metres AOD. The nature of the workings over the past 70 years has left two promontories which provide for an irregular partitioning of the workings resulting in the north-eastern part of the workings having irregular undulating topography with levels ranging from 63 metres AOD to 86 metres AOD on the northern boundary. To the north of the quarry the land continues to rise to between 150 and 170 metres AOD, whilst to the east it drops into the wooded dale occupied by Haugh Wood (at 40 metres AOD); to the west the topography undulates around 90-100 metres AOD and to the south the land drops to 31 metres AOD in Pickering.

Extraction in the area pre-dates the formal planning process of the 1940s but the original consent at the site was granted in the 1940s. The site is currently operated under the terms of a "determination of new conditions" issued in June 2000 under the Review of Mineral Planning Permissions legislation brought in by the Environment Act 1995. A proportion of the south and east of the existing quarry has been restored to a mix of agriculture and



INVESTOR IN PEOPLE

keep north yorkshire moving

the planting of sufficient replacements to compensate for the detrimental effect on the landscape, on wildlife and on atmospheric quality.

The District Council will monitor the implementation of agreed schemes and the well-being of all new and replacement planting and will, in appropriate circumstances, take action to ensure the implementation of outstanding schemes and also the replacement of any unsuccessful specimens.

In some cases, off-site landscaping may be required as an alternative to, or in conjunction with, on-site landscaping."

Planning Considerations

Policy ENV4 of The Yorkshire and Humber Plan Regional Spatial Strategy (RSS) states that Mineral Planning Authorities should amongst other matters make provision for the sub regional apportionments as set out in the Table 10.1 of the RSS and endeavour to maintain a landbank for all nationally and regionally significant minerals. However in June 2009 revised national and regional guidelines were published for the provision of aggregates in England for the sixteen-year period 2005-2020. These guidelines envisage that 212 million tonnes of land-won hard rock will need to be supplied from the Yorkshire and Humber area, compared with 220 million tonnes of land-won hard rock for the period 2001 - 2016 which was taken into account in the RSS (of which 74 million tonnes was to come from land within North Yorkshire County Council's jurisdiction). The proportion to be supplied from land within North Yorkshire County Council's jurisdiction for the period 2005-2020 is not yet published. However, the need to provide for an adequate and steady supply of minerals remains.

The Newbridge Quarry extension site was identified as being a Preferred Area as part of the provision for crushed rock supplies within 'saved' Policy 5/5 of the North Yorkshire Minerals Local Plan (1997). The Preferred Areas were identified as a means to help maintain production levels and to contribute to the sub regional apportionment supply as proposed in 'saved' Policy 3/2 of the Minerals Local Plan. In terms of the Preferred Areas identified, Newbridge Quarry is the last of the five sites identified in paragraph 5.3.10 of the Minerals Local Plan to come forward for consideration through the planning application process. The application site is slightly smaller than the area envisaged in the Minerals Local Plan as it excludes an area of 4 hectares to the south of the New Hambleton Farm access adjacent to Swainsea Lane and the underground reservoir. Nonetheless, the proposal will make a contribution to the provision for crushed rock supplies as sought by 'saved' Policies 3/2 and 5/5 of the Minerals Local Plan.

Newbridge Quarry currently serves a market of processed aggregates for the use in manufacture of concrete products and general construction uses mostly within 15 to 20 miles of the site, (along the A170 corridor between Thirsk and Scarborough, and in the Vale of Pickering and on the North York Moors). Current supplies at Newbridge are virtually exhausted and the grant of planning permission for the extension for Newbridge Quarry would enable the site to continue its contribution to the mineral supply in the area in accordance with the principles of Policy ENV4 of the RSS. Otherwise the three other quarries that currently work the Jurassic limestone: Whitewall, Wath and Settrington would potentially have to meet the shortfall in supply, plus or minus a new site which would have implications for the longevity of those sites and environmental implication particularly in terms of traffic.

PICKERING CP



Malton and Ryedale Stones

The earliest surviving buildings in Malton and its immediate vicinity were constructed of either Hildenley or Malton oolitic limestone. It is unknown to what extent the Romans used Hildenley for building, since no close identification of the limestones of which the gates and domestic houses excavated in the fort or adjoining vicus areas in the 1960s was made. There are numerous remnants of Roman sculpture of Hildenley limestone in Malton Museum as well as in York. All 11th and 12th century churches in Old and New Malton incorporate Hildenley limestone. St Mary's Priory church and St Michael's church were built almost exclusively of Hildenley; St Leonards church today retains only remnant aisle walls of Hildenley and odd ashlar blocks to the lower levels of the 15th century tower, which are otherwise of calcareous sandstone. This latter church was substantially rebuilt in 1907. The upper level of the tower is entirely of carboniferous West Yorkshire grit-stone, in common with other parts of the church rebuilt or refaced in 1907. The interior columns and capitals of St Leonards are of Hildenley. Typically, those medieval buildings in the town that are of Hildenley limestone were built by the church and, specifically, after 1150, by the Gilbertine Priory in Old Malton.

Hildenley limestone is to be found in cottages and houses locally, constructed after the Dissolution of the priory in 1539, using material robbed out from the priory complex or, in several nearby villages, from the buildings associated with priory granges.

Many of the churches of villages around Malton were constructed of or contain significant

elements in Hildenley limestone. Many were considerably rebuilt during the C19, most commonly in Birdsall calcareous sandstone, but either left unmolested or reused considerable quantities of Hildenley limestone from the earlier buildings – churches in Bossall, Amotherby, Barton-le-Street, Appleton-le Street, Hovingham, Crambe, Slingsby, for example.

After the Dissolution, the Hildenley quarries fell into the ownership of the Strickland family and were used extensively upon properties they built or owned. Boynton Hall, the family seat near Bridlington, incorporates windows and a portico of Hildenley limestone designed by Lord Burlington around 1730, as well as Palladian chimney pieces designed by William Kent. York House underwent significant alteration in the early years of the C18 using ashlar and dimensional stone from Hildenley. York House already held walls of Hildenley robbed from the priory; the hunting lodge is built entirely of Hildenley and was built probably during the 16th century, perhaps using stone also robbed from the priory site. It has a complex sequence of undercrofts, some with columns and pilasters, built of Hildenley limestone. The dimensions and tooling patterns of some of the stone of the undercrofts has been interpreted by some as being recycled Roman material, although this possibility, as well as the origin of the earlier building currently encased in 18th century additions, has yet to be fully explored. Stone robbed from Old Malton Priory may itself have been Roman material reused after 1150. Howsham Hall, another former Strickland property, is built of Hildenley limestone also – quarried from both the ground and from Kirkham Abbey nearby. Hildenley Hall was demolished in 1908, but the elaborate portico of this building was relocated to the south side of

the Lodge in Old Maltongate, and is of Hildenley limestone.

All but one of the numerous stone-vaulted spaces investigated so far within the medieval boundary of the town were formed of either Malton oolite or Hildenley limestone. The only vault constructed of calcareous sandstone has been provisionally dated to the 15th century by Building Archaeologists from York University, and this is consistent with the conclusion of my own survey of the buildings in the town that calcareous sandstone seems to have been little used within the town during the earlier medieval period.

The earliest significant use in Malton (Birdsall calcareous sandstone seeming to have been used extensively for church construction further from the town, and from the Malton oolite or Hildenley formations), seems to have been by Ralph, Lord Eure, for the construction of a significant 'Prodigy House', completed by 1608.

Contemporary sources compared the house to Audley End and Theobolds, but no images of its apparent magnificence survive. The house was meticulously dismantled, its stones sold, in 1674, after a celebrated ruling by the High Sheriff of Yorkshire, and this demolition may date significant repairs to St Leonard's church, as well as the first extended use (re-use) of calcareous sandstone throughout the town. The calcareous sandstone window surrounds and quoins to the north elevation of York House may also have been fashioned from stone recycled from the Prodigy House, relocated after Sir William Strickland's acquisition of the property in 1682. The subsequently extended gatehouse of the Eure mansion survives, although only its front elevation escaped a complete (if apparently faithful) refacing in 1878 by the Wentworth

family, using a very different sandstone from West Yorkshire. The stone of the earlier extensions will have been sourced, almost certainly, from the dismantled House to the immediate south. The quarry from which the stone for the original house was sourced survives across the road from the gatehouse.

The Eure's consolidated their ownership of New and Old Malton in 1617. Some of the manor passed to William Strickland upon his marriage to Mary Eure in 1682; the rest was sold to the Wentworth-Watson estate in 1713. The Wentworths in their turn consolidated their ownership of the whole in 1739, purchasing the remaining Strickland holdings locally (Strickland had sold property piecemeal to the Wentworth's from after around 1718). The Fitzwilliam family, which combined with the Wentworths by marriage after 1742, and directly inherited the Estates in 1782, continue to own the majority of the property within the medieval boundary of the Borough of New Malton.

Shortly after acquiring the Strickland properties, which included York House and the Hunting Lodge (acquired in 1713), they converted the latter property into a well-acquainted hotel serving the interest of the local gentry in horse-breeding and racing. The building was raised a storey and the courtyard of the U-shaped earlier building finally fully enclosed by the early C19. The raising was executed in brick and in oolitic limestone - in contrast to the Hildenley limestone of the core structure.

The Wentworth-Fitzwilliam ownership witnessed significant volumes of new building in the town, which peaked by the middle of the C19. Almost exclusively, this new construction was executed in either brick or calcareous sandstone ashlar.

Calcareous sandstone was exported by way of the improved Derwent navigation – for the construction of Stamford Bridge, for example – from the Wentworth's Brows Quarry. By this time, of course, Castle Howard had been constructed of calcareous sandstone, demonstrating not only the beauty of this honey-coloured stone, but also its ready acceptance of detail and carved ornament. The stone was quarried locally to the house and may seem to have proved somewhat more durable than the Malton equivalent. The vulnerability of calcareous sandstone to carbon-based pollutants, however, and the presence of such pollution historically, through coal fires and currently, from vehicle exhausts, may distort this judgement. Castle Howard had clearly established the high status of calcareous sandstone locally, however, and the Wentworth's used it in preference to either Hildenley or Malton oolite. Indeed, remnant limewash to the limestone of York House, as well as to most oolitic limestone buildings owned by the Wentworths suggests that the attempt was made to render all stone buildings in the town of calcareous sandstone appearance. The pigment in the limewashes observed around Malton was copperas, giving an orange hue not dissimilar to the calcareous sandstone. No traces of such limewash (or of any limewash at all, except internally) are to be found upon the sandstone buildings in Malton, although this may reflect the pattern of decay of this stone, which powders slowly away over time as its matrix is degraded by the action of salts and pollutants.

Calcareous sandstone seems to have been the preferred material for repairs during this period also. Randomly distributed calcareous sandstone blocks in the otherwise Hildenley limestone tower of St Michaels church, for example, are

likely to denote Wentworth era repairs, their being patrons of this as well as of St Leonards and St Marys churches.

The geology of the buildings of Malton, therefore, seem to be a fair indicator of specific periods of ownership and construction. Malton was blessed with an abundance of good quality building stones, as well as ready access, to the south bank of the River Derwent, of excellent brick earths. This abundance is reflected in its architecture from all periods and is at the core of its architectural character and significance.

The last stone to be found extensively in Malton during the historic period is North York Moors sandstone. This is a deltaic sandstone from the Jurassic period quarried extensively since at least the Roman period above Whitby. It ranges in colour from pale brown and pink (with purple bands) to dark orange and dark brown. It is a very durable material (although vulnerable to salt and vehicle exhaust pollution) and was especially prized for marine defences and harbour walls. It is likely to have been brought into Malton for paving, copings and stone ridges. No local stones beyond Hildenley could so effectively serve these purposes. This stone would have been carried by sea and river from Whitby, particularly after the improvement of the Derwent navigation after 1702.

In 1847, 27,000 tonnes of sandstone left Whitby harbour. Between 1825 and 1840, 3,860 tonnes of 'flags, stone, etc' were carried up the River Derwent, as recorded by the Stamford Bridge lock keeper (Copperthwaite p65, 1841).

No complete buildings of Aislaby (Whitby) sandstone exist in Malton, but many flags and copings do survive and ashlar blocks crop up across the town, used for repair – in the south

aisle of St Michaels, for example, or as plinth stones – to the otherwise Hildenley limestone ‘Vanbrugh Arch’. Door surrounds and architectural detail in Saville Street, the only thoroughgoing Victorian street in Malton, are also of base-bed Aislaby sandstone.

Another sandstone imported into Malton from the early period was Brandsby Slate – a calcareous sandstone that occurs around the village of the same name, which was particularly suitable for roof slates. York House and the Hunting Lodge were both roofed with stone slates by 1728, and such slates have been found during excavation of the hearths in York House. The stone slates currently seen on York House are more siliceous and are likely from West Yorkshire. A similar stone slate to the Brandsby slate used to be quarried in the Tetbury area of the Cotswolds, from outcrops adjacent to the oolite. Such slates in this area are now imported from India, representing a fair match.

Since the middle of the C19, at least, this essential vernacular has been under assault for two main reasons: the accelerating introduction of stones for repair of quite alien geology, and air-borne pollution.

The arrival of the railway in 1848 saw a trickle of West Yorkshire sandstone of quite different geology and character into the town. Where used for new doorways or buildings, this was not inappropriate, perhaps, but when used for repair, alongside the local calcareous sandstone, its longer term consequences have been less fortunate. Neither the calcareous nor the Jurassic sandstones tend to develop black skins in contact with airborne pollution, retaining a weathered ‘natural’ patina. The Carboniferous, highly siliceous sandstones from the Pennines do

attract such a patina and may be readily identified locally by such blackness.

Increasingly expedient repair methods adopted by the Fitzwilliam Estate during the 20th century led to the frequent and piecemeal use of alien and inappropriate materials (as well as ordinary Portland cement mortars) for repair – Brow’s quarry having closed by the end of the First World War, and the Malton Oolite quarries by the start of the second. The routine limewashing of stone buildings in the town ceased; some buildings, at least, were painted with impermeable modern paints, or rendered with opc mortars.

From the point of view of building conservation today, the unceasing problem of vehicle exhaust pollution in the town and the extensive use of opc mortars after the war and until very recently, has meant that high levels of decay are evident to many of the stone structures in the town.

Whilst largely unrecognised in the past, the exceptional significance of the town as a whole and of many buildings within it is being reflected in the repair policy and philosophy of the Fitzwilliam Estate. The errors of the past are being carefully undone, particularly in regard to mortars and the essential breathability of buildings in their care.

An application to reopen Brow’s Quarry is in process, which would deliver access once more to both calcareous sandstone and a finer-grained oolitic limestone. The only local source of oolitic limestone at present is from Whitewall quarry, where road-stone is produced by blasting and from which building stone has to be hand-picked and is not commercially available.

There is no known currently active source of similar calcareous sandstone in the UK or Europe, and the calcareous sandstone locally has proved especially vulnerable to decay as a direct consequence of vehicle exhaust pollution. Its availability for use in the repair of historic buildings locally is essential to the preservation of the authentic character of Malton, as well as of important monuments and towns locally.

Calcareous sandstones from the cretaceous period are still quarried and sawn in West Sussex. These are inherently softer than the local calcareous sandstones, although their use may be preferable to any sandstones available regionally should current opposition to the re-opening of Brow's Quarry prevail. Their colour and texture is a fair match for the local stone.

There are numerous buildings of calcareous sandstone in Pickering and in countless villages within and on the edges of the Vale of Pickering, as well as numerous churches from the mid- to late medieval period. Extensive replacement works to some of these latter buildings have been carried out in recent years using siliceous sandstone from Dunhouse, Darlington, sullyng irrevocably their historic character. The lack of availability of a suitable calcareous sandstone will lead inevitably to the repetition of such mistakes – themselves understandable so long as no source of calcareous sandstone exists.

The Hildenley quarries being long since closed and the closure and infilling of oolitic limestone quarries locally has led to the confused and often inappropriate introduction of limestones from elsewhere with which to repair Hildenley and oolite buildings locally, none of them as white or as fine and often of quite distinct geology – such as Magnesian limestone used to

replace Hildenley. Ancaster 'hard white' seems to have been the favourite of many architects, but this is more appropriately used for the replacement of the tan orange of the calcareous sandstone, not as it has tended to be, for the white to buff-white of the local limestones.

Other Lincolnshire limestones are being increasingly imported, from Creeton, for example. Whilst these are Jurassic and certainly oolitic, they also tend to yellow. This may be appropriate, according to the particular building, built with stone from a particular local quarry. Some of the Malton Oolite around Settrington, for example, bears similarity to the Creeton oolite. Generally, however, Malton oolite tends to pale cream and white.

For small-scale repairs to oolitic limestone buildings in Malton, hand-picked stone from Whitewall quarry may be appropriate, but this will usually require hand-dressing as well as locating in random piles of material awaiting crushing for aggregates. For larger-scale works, the most appropriate sources are likely to be quarries in the Cotswolds, a significant distance, involving significant embodied energy. Limestone from Brow's Quarry would mitigate this need to seek so far. In the meantime, and perhaps where large volumes are required, Hard White Tetbury limestone from the Cotswolds is by far the best oolitic limestone available. It is quarried on the same geological horizon as the Malton oolite.

Initial steps to facilitate the reopening of one, at least, of the Hildenley quarries are underway, but the extent of viable reserves has not yet been established; nor the willingness of the owners to allow a reopening at all. In the meantime, it is my opinion that the most appropriate substitute

material – where replacement of authentic Hildenley limestone is essential – is Portland Basebed – particularly Jordan’s Basebed as supplied by Albion Stone. The appearance of Portland and Hildenley is very similar under magnification and to the naked eye; their colour and character is very like when new and when weathered. They are geologically and chemically similar, although Portland lacks the clay content of Hildenley. Hildenley is not generally oolitic, but the oolids in Portland stone are so small as to make the difference insignificant (Wright, perscomm). Whilst used frequently as ashlar, Hildenley limestone was used especially for carved detail and performed significant structural function – for window and doorheads and cornices, for example. It is essential, therefore, that any replacement should be similarly carvable and strong.

Marnhull limestone from around the village of the same name, just north of Sturminster Newton, Dorset, has been suggested after petrographical analysis of Hildenley limestone. However, this is a strong cream colour when quarried and weathers to brown upon exposure to the atmosphere. It would not be a good match at all. It is also strongly oolitic.

For mass walling and squared rubble work in Hildenley, Tetbury Hard White would be a least worst option, short of Portland Base-bed. The latter is very expensive; Tetbury less than half as expensive. Whilst the Tetbury stone – as the Portland – is oolitic, the oolites are small and tight, as they are in Portland basebed.

It must be stressed that replacement of original material should always be a last resort and that the preservation of authenticity may often be better served by the deployment of honest repair

and lime mortar repair, at least until the ability of original material to perform its structural function has been lost. New stone, however well-matched, cannot restore authenticity, contributing only to the protection and preservation of the greater authenticity of the whole. All buildings should be allowed to look their age.

Villages.

Most vernacular buildings in the villages around Malton and across Ryedale, were built with immediately local stone, from quarries in their immediate vicinity. Churches and grander houses may have stones from further afield. In the earlier period, even this may have been prohibitively expensive unless there was navigable water close by. Calcareous sandstone travelled on the Derwent; Whitby sandstones similarly. Alne church, for example, is built almost entirely of North York Moors sandstone, brought via the nearby River Ouse from Whitby. Hildenley limestone travelled significant distances over land due to its being by far the best and the finest dimensional and carving stone available.

Magnesian limestone was rarely used in Ryedale until the most recent of times – this use reflecting the penchant of York masons and architects for its almost exclusive use. Its geology is quite alien to Ryedale, and it blends very poorly with local materials.

The villages at the foot of the Wolds are built of either Malton oolite or Birdsall calcareous sandstone, or a mixture of the two, for the most part. In these areas, the calcareous sandstone is seen in generally vernacular use as coursed

rubble. In Malton, this form of use is rare, the stone appearing mainly as ashlar, however much eroded it is now. On the high Wolds, brick or local chalk are most common. The chalk was shaped into rough blocks and coursed generally.

A porcellanous creamy-white limestone very similar to Hildenley limestone in appearance and structure was quarried historically in North Grimston. This is considered very little frost resistant, but was clearly used in the immediate locality, if only for coursed rubble walling. Several buildings in nearby Norton would seem to have been built with this material and are in a generally sound condition.

Around Howsham, Barton-le Willows and Harton, the local oolite, a strong cream colour, is dominant, with intrusions – and occasionally whole elevations – of an orange-brown sandstone, probably a carstone, that occurs in shallow beds hereabouts. Calcareous sandstone, carried on the Derwent, also appears, as well as Hildenley limestone robbed from Kirkham Priory or imported for use by the Stricklands.

Travelling towards Helmsley from Malton, one passes through villages of mainly oolitic limestone – the sort that was quarried extensively at Whitwell, dubbed ‘Whitwell’ or ‘Cave’ oolite by Howe. This displays a lot of blue – such stone still being quarried for roadstone at Wath quarry in Hovingham. The operator blasts the face, however, compromising the integrity of any rubble stone that may be diverted for building or repair.

In Hovingham, buildings are of this cave oolite, or better oolite, as well as calcareous sandstone. Hovingham Hall is of high bed calcareous sandstone very similar to that quarried in Malton

and quite possibly transported from Brow’s Quarry.

Between Hovingham and Helmsley, the walls and many of the buildings are built with the hard shelly, sandy and fragmentary limestone of the ‘Dogger’. This is a Cornbrash. Some particularly suitable beds of this were used to make roof slates of good durability, and these appear on buildings in Coxwold, for example.

Around Helmsley, the stone is predominantly calcareous sandstone and oolitic limestone, with North York Moors sandstone also. The immediately local stones in this area may be characterised as lime rich sandstones and sandy limestones in varying proportions, of similar general hue to the Birdsall calcareous sandstones.

On the North York Moors, the stone is almost universally of immediately local provenance. The deltaic sandstone varies in hue, from dark orange to brown, to purple to grey, but buildings are rarely found of one colour, or bed alone, being a mixture of several or indeed all of the different shades of the local sandstone. All contain some calcium carbonate. This thoroughgoing use of local material gives the Moors a very strong and unified local character. It is fortunate, therefore, that this stone is still quarried, although care must still be taken in the selection of stone for repair and conservation from the most appropriate beds, as the colour and character of these can vary significantly.

It has been common to substitute the North York Moors sandstone for the Birdsall calcareous for work on many important and listed buildings in Ryedale, and this has been sanctioned by English Heritage, in the absence of a source of the local calcareous sandstone. Whilst this is frequently

the least worst option, particular care over stone selection must be taken when this substitution is made. The browner, more tan beds are okay – the purple beds are clearly not. These latter were used recently for the repair of Kirby Grindalythe church. It is not enough to order stone from the ‘right’ or approved quarry; the bed and colour must also be specified, especially when the host building is of a different geology.

Whenever stone of very similar geology is not available, the strategy for repair should be even more acutely focussed upon minimising the replacement of original material.

Recommended alternatives for unavailable local stones:

For dimensional and carved Hildenley limestone, especially lintels, cornices, quoins etc: Portland Basebed.

For coursed rubble walling of Hildenley limestone: Tetbury Hard White limestone, available from Stone Supplies (Cotswolds); or Portland Stone, either Whitbed or Basebed.

Portland stone available from either

Stone Firms Ltd, 99 Easton Street, Portland, Dorset DT5 1BP , email: andrew.jackson@stone-firms.co.uk or from

Albion Stone plc, Independent Offices, Easton Street, Portland, Dorset, DT5 1BW
Email: sales@albionstone.com

For Malton Oolite: Tetbury Hard White limestone, random rubble, or ashlar, according to building under repair.

Tetbury Hard White limestone is available from Stone Supplies (Cotswolds), Veizey’s Quarry, Avening Road, Tetbury, Gloucestershire, GL8 8JT.
www.stonesupplies.co.uk

For calcareous sandstone: preferably local calcareous sandstone, currently unavailable or: calcareous sandstone from West Sussex. Top or Building Grade available from Lambs, Philpots Quarry, Philpots Lane, off Hook Lane, West Hoathly, West Sussex, RH19 4PT email: philpotsquarry@lambstone.com